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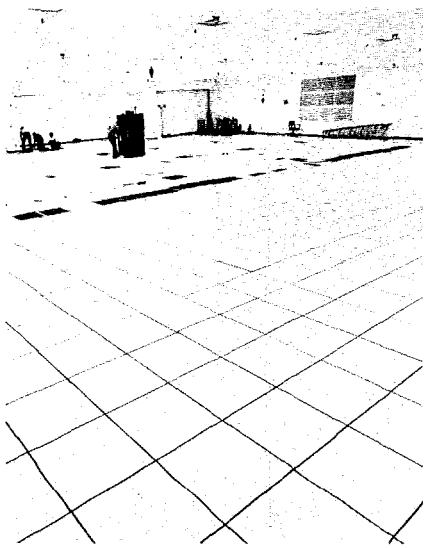
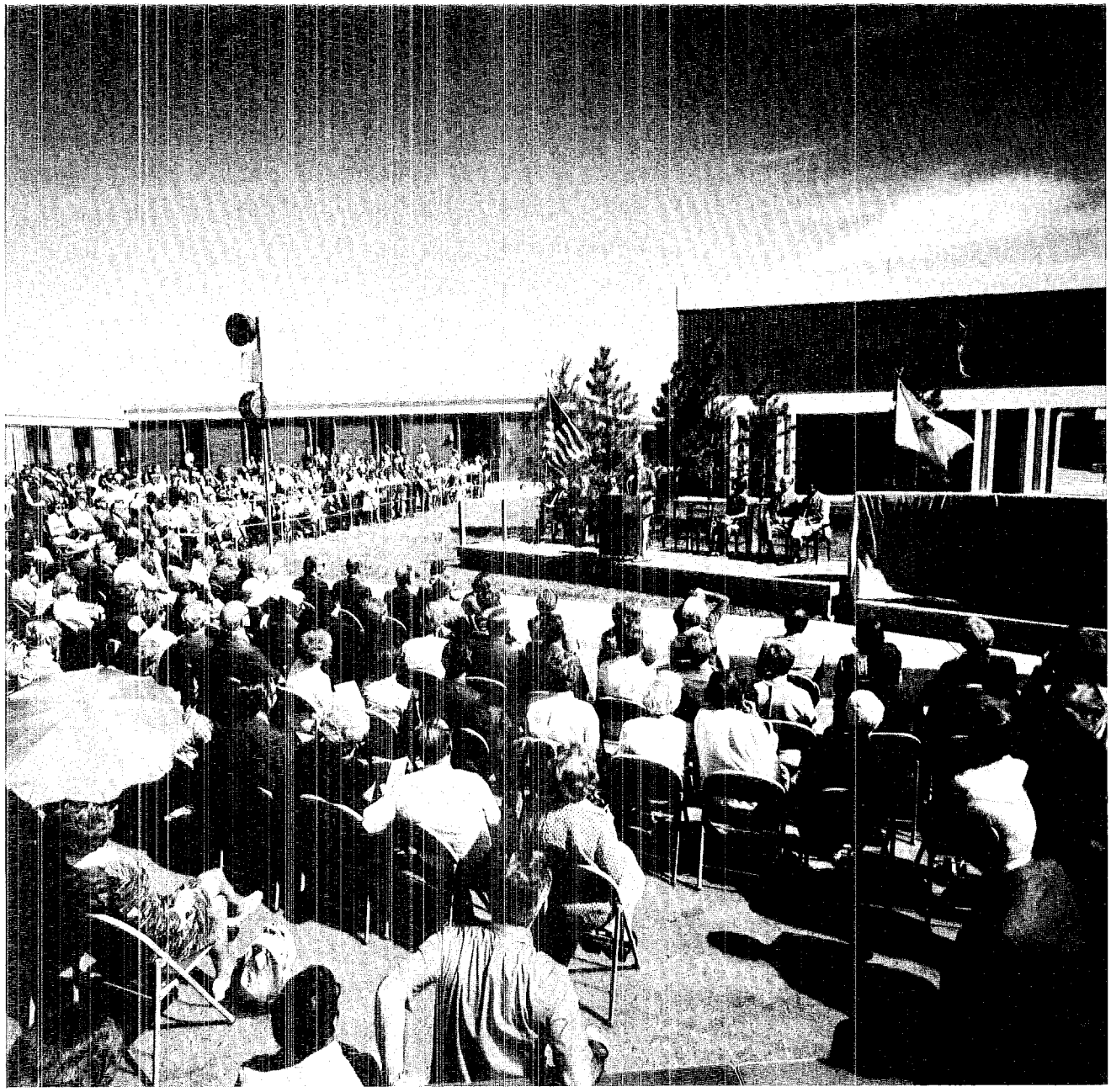


COVER:

The cover photograph, taken by ISD-7's Bill Jack Rodgers, depicts the first piece of equipment to be moved into the LASL Central Computing Facility's new computer wing, one of three additions to the CCF. The new wing now houses the Laboratory's three CDC 6600 computers. For more detailed information on the CCF expansion project, read the story beginning on page 10.

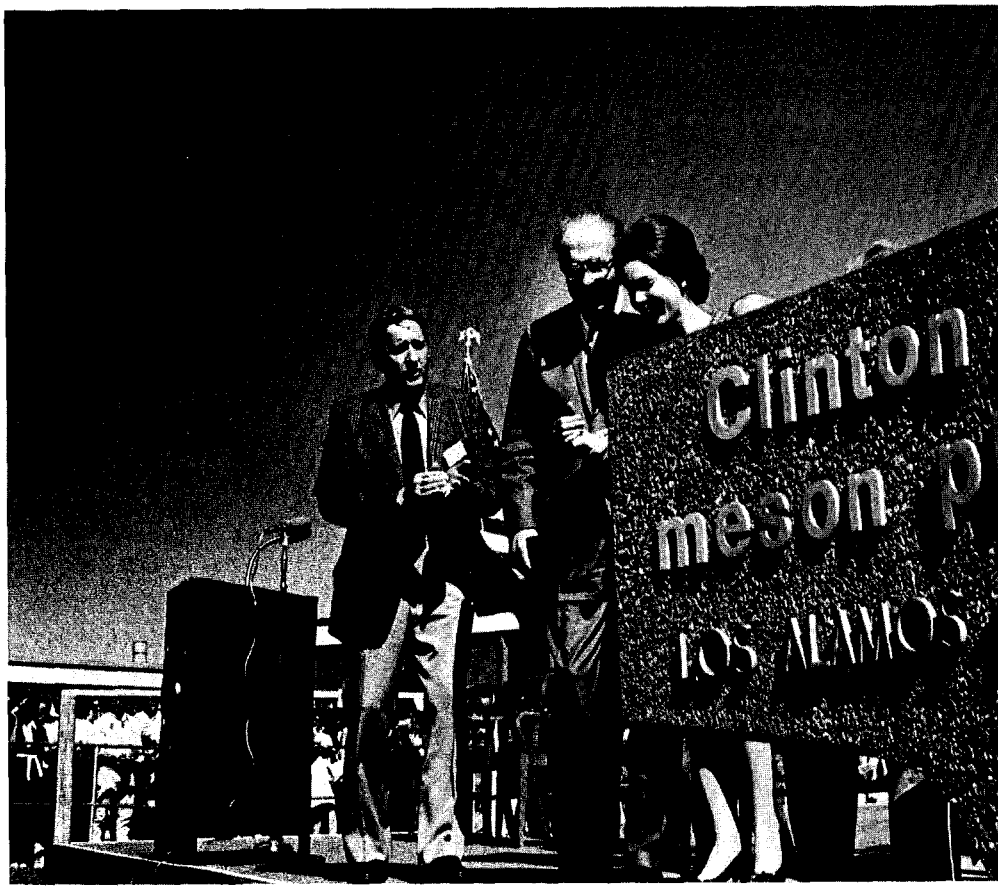
Meson Facility Named For Senator Clinton P. Anderson

Photos by Bill Jack Rodgers,
Ivan Worthington and Henry Ortega

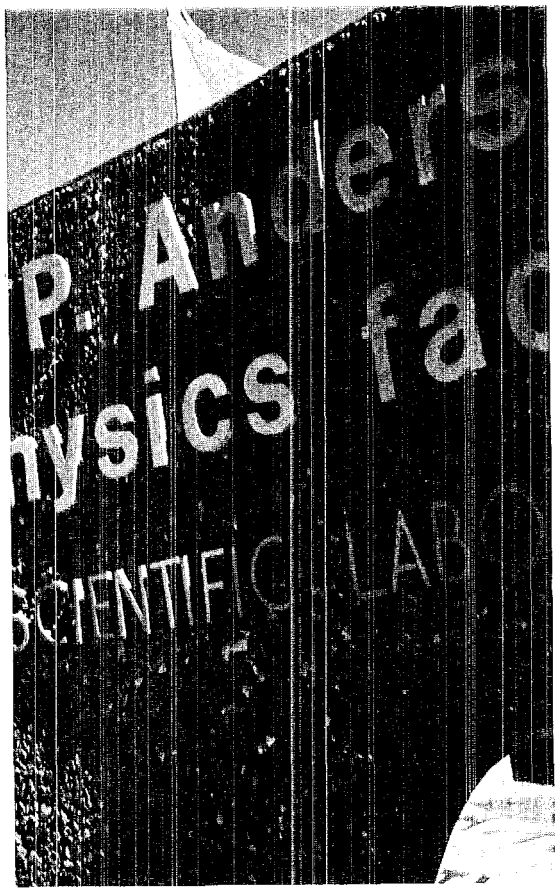


About 1,000 persons attended the ceremony to name the Los Alamos Meson Physics Facility for U.S. Senator Clinton P. Anderson. The cast of participating dignitaries included Julie Nixon Eisenhower, daughter of the President. Others were Norris Bradbury, former LASL director; Louis Rosen, MP-Division leader; U.S. Senator Joseph Montoya; AEC Commissioner Clarence Larson; LASL Director Harold Agnew; and U.S. Representative Manuel Lujan, Jr.

Above, Anderson was driven to the Injector Building by Rosen where the senator and other dignitaries began a tour of the accelerator facility. Others in the car were Mrs. Rosen, Mrs. Anderson and Sherburne Anderson, Albuquerque, the retiring senator's son.

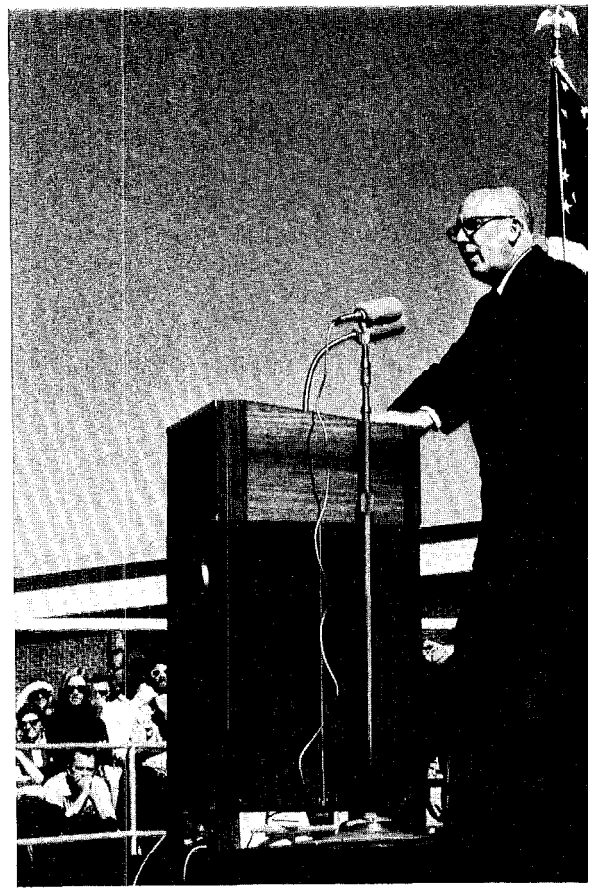


Below, Rosen explains activities that will take place in Experimental Area A to Lujan, Montoya, Anderson and Mrs. Eisenhower.



Above, the dedicatory marker for the Clinton P. Anderson Meson Physics Facility was unveiled by Anderson and Mrs. Eisenhower. At left is LASL Director Harold Agnew who was master of ceremonies for the occasion.

Right, AEC Commissioner Clarence Larson officially named the Meson Facility for Anderson.



Right, Anderson and Mrs. Eisenhower pause briefly during the tour of accelerator facilities to talk. At left is Rosen. Behind Mrs. Eisenhower is Agnew.

A Sideline Mushroomed

By Barbara Storms

The Los Alamos Scientific Laboratory's industrial hygiene group, H-5, has added more than $500,000 to its budget, doubled its staff, and grown desperate for more space and personnel. This happy state of affluence is the result of recent interagency agreements between the Atomic Energy Commission and the National Institute for Occupational Safety and Health (NIOSH) for projects in fields in which H-5 is the nation's recognized authority.

At the present time, H-5's NIOSH activities are limited to specific studies in respiratory protection, air sampling and analytical chemistry, but the potential for expansion seems unlimited.

"This thing has really mushroomed," said Harry Schulte, H-5 group leader. "NIOSH wants all this work done and we just can't take on any more. We don't have the space or the people."

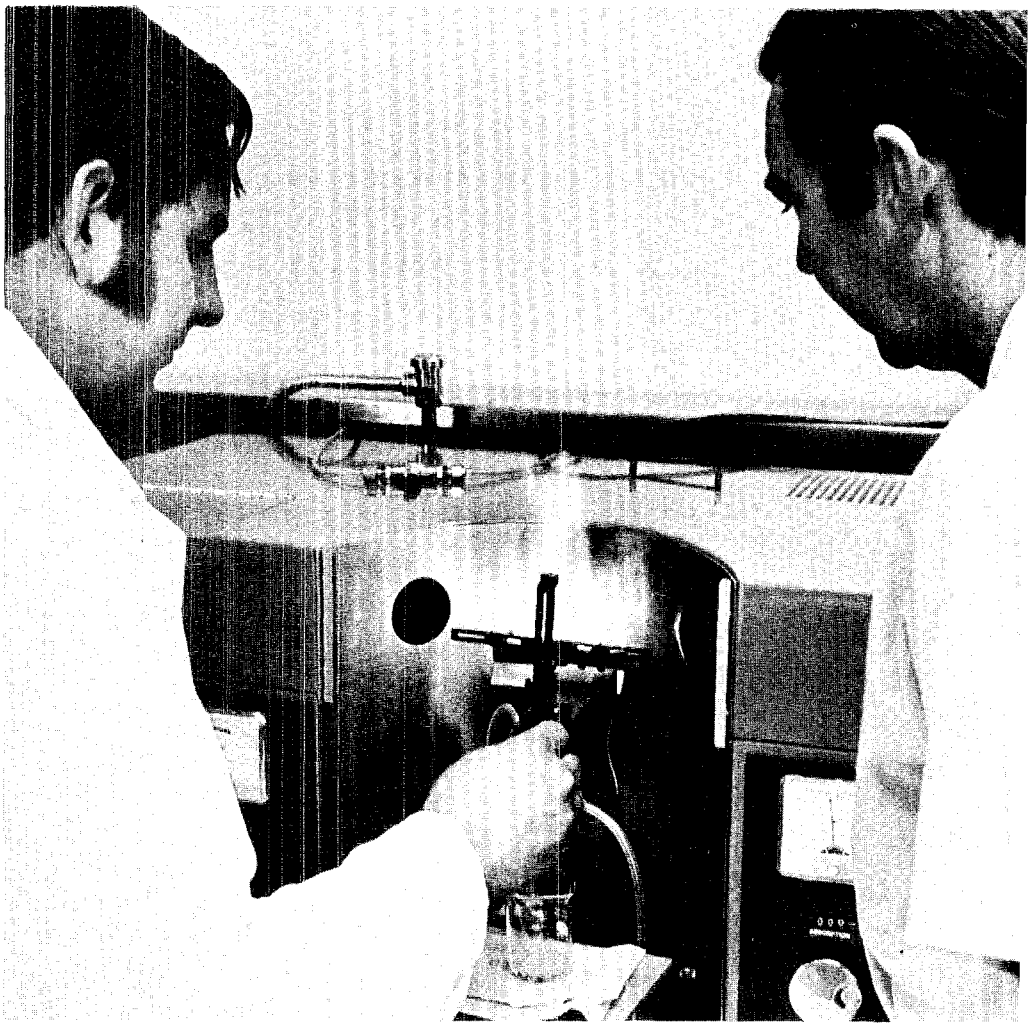
Reason for the crash program in industrial health research is the 1970 Occupational Safety and Health Act which established NIOSH and charged it with, among other things, the responsibility for conducting the research necessary to develop standards and criteria for occupational exposure for all non-radioactive materials in U.S. industry.

We've been doing this kind of work for years," Schulte said, "but it's always been a sideline while we concentrated on AEC and Laboratory problems. Now it's beginning to pay off." However, he added, "now that we're really getting into it, we're finding out how much more we need to know."

For instance, the group leader said, there is a tremendous need for research on pollutants within the plant. In-plant standards will be quite different from those for the general population because there are differences in the people in each category. The general population includes the elderly, the ill and infants, while it is assumed that only healthy adults are working in plants and that they are under medical supervision. Schulte emphasized that the NIOSH projects are related exclusively to hazards to the worker in the occupational environment and are not concerned with general environmental contamination.

One such project is a $35,000 program for a full-scale experimental evaluation of recognized analytical procedures, currently in use, for the determination of mercury in the air, blood, urine and tissue. The project is directed by Evan Campbell, leader for the Analytical and Chemical Section, assisted by Pat Trujillo and Pat Stein.

"We're taking a thorough look at the estab-



New methods for sampling mercury and separating the toxic inorganic variety from organic are tested by atomic absorption spectrometry by Pat Trujillo and Evan Campbell of the Analytical and Chemical Section.

lished methods in the hope of developing an improved basic procedure that can be used by all laboratories," Campbell said.

And it is only fitting that such work should fall to H-5. Fifteen years ago the first standard method for mercury determination was established by Campbell and Billye Head of LASL and it became the most widely used method in the United States.

"It was a specific dithizone procedure that is no longer applicable to modern mercury compounds," Campbell said. "With the advent of atomic absorption photometry, the limits to which mercury can be determined have toppled to the nanogram level." It now becomes necessary to find ways to sample both organic mercury, which is extremely toxic, and inorganic mercury, which is less so, in the working environment and then be able to analyze them separately.

NIOSH's present recommended sampling absorbent is iodine-activated charcoal but, because charcoal absorbs "everything," the group has proposed that "anything would be better than charcoal and H-5 would like to find it," Campbell said. Most promising absorbent being investigated is silver-coated sand, an interesting reversal of the old silver-mining method in which mercury was used to draw out the silver.

Another project occupying two new staff members in the Analytical and Chemical Section is a $100,000 study for the development of a gas and vapor sampling tube and a method of analyzing the gases and vapors after sampling.

From NIOSH's list of 25 top priority toxic substances that must be studied, Gerry Wood and Robert Anderson are looking at five, and for each of these, they must produce an air sampler that will meet a number of practical requirements and an analytical method that will be simple, fast and reliable.

"The need for simplicity and speed can't be

continued on page 6

A personal sampling device for formaldahyde, developed in H-5, is demonstrated by Bob Anderson with help from Gerry Wood. Device includes a sampling pump worn at the waist with a solid absorbent tube which collects air from the breathing area. Tube retains material throughout the working day and until sampler can be analyzed.

overemphasized," Campbell said, explaining that this analysis is being done at two laboratories in the United States and by many senior industrial hygienists and their surveyors in each of the 10 regions covering the United States. "If each man takes several samples a day, that adds up to a tremendous number of samples of a tremendous variety of materials that will have to be analyzed."

In the past six months, Wood and Anderson have concentrated on formaldahyde, NIOSH's first priority material, and have just about decided on alumina as the best absorbent for the sampler which must absorb and retain materials from the worker's breathing area through an eight-hour day and then release them for analysis only after the sampler has been mailed to the laboratory.

Reclaiming 100 per cent of the materials absorbed by alumina proved to be a tougher problem but was eventually solved by a heating process. Analysis was done by gas chromatography but the investigators point out that other techniques will be tried such as ultraviolet and infrared.

About one-third of the work of Harry Ettinger's Aerosol Studies Section is funded by NIOSH and is primarily concerned with the hazards to workers due to coal dust and asbestos fibers. NIOSH provided $110,000 for this work this year and is expected to contribute $155,000 next year for work which has resulted in the addition of two staff members and two technicians to the section. Working with Ettinger, who is also alternate group leader, are Charles Fairchild, Owen Moss, Lawrence Ortiz, Bonnie Isom, Donald Gettemy and George Royer.

The project is aimed specifically at respirable dust, Ettinger said. These are the small particles, less than two microns in diameter, which deposit in the lower portions of the lung for long-term retention and are responsible for lung diseases such as miner's lung or pneumoconiosis and asbestosis. Larger particles deposit in the nose, throat and upper lung and are eliminated by the nose and GI tract leaving no long-term effects.

"Our job," Ettinger said, "is to evaluate the hazards due to these materials and to develop methods of air sampling that will break down the quantities of materials by size."

One aspect of the program, now completed, is the design, testing and fabrication of a prototype calibration test system that will check personal air samplers for their ability to measure the con-

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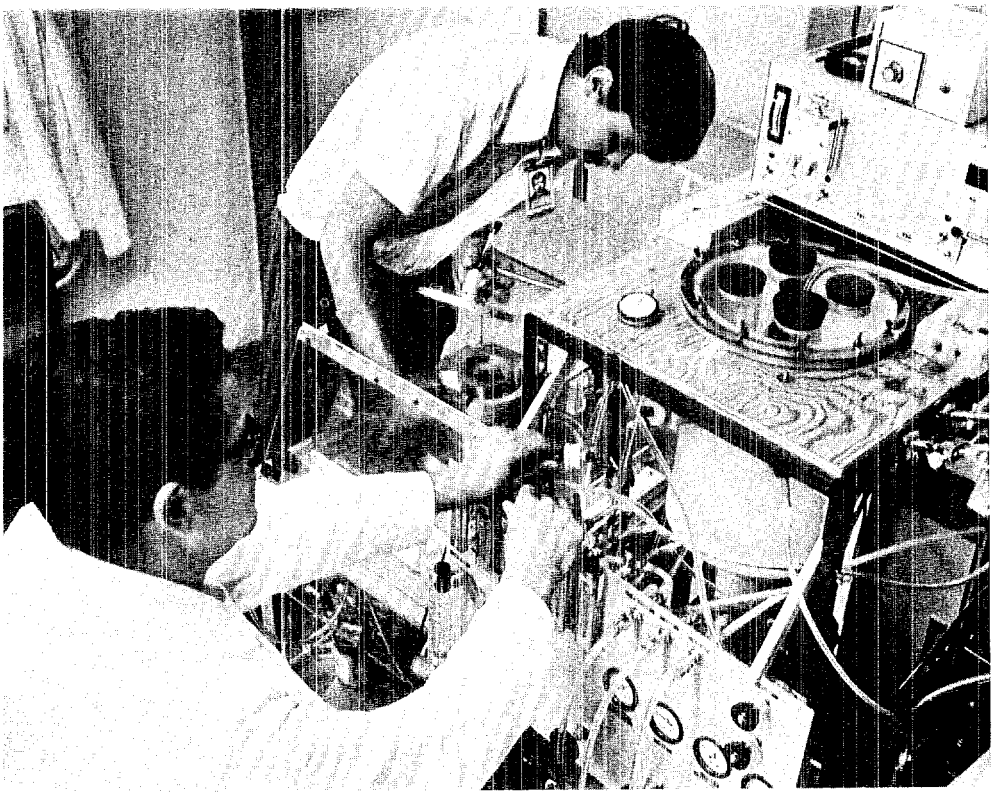
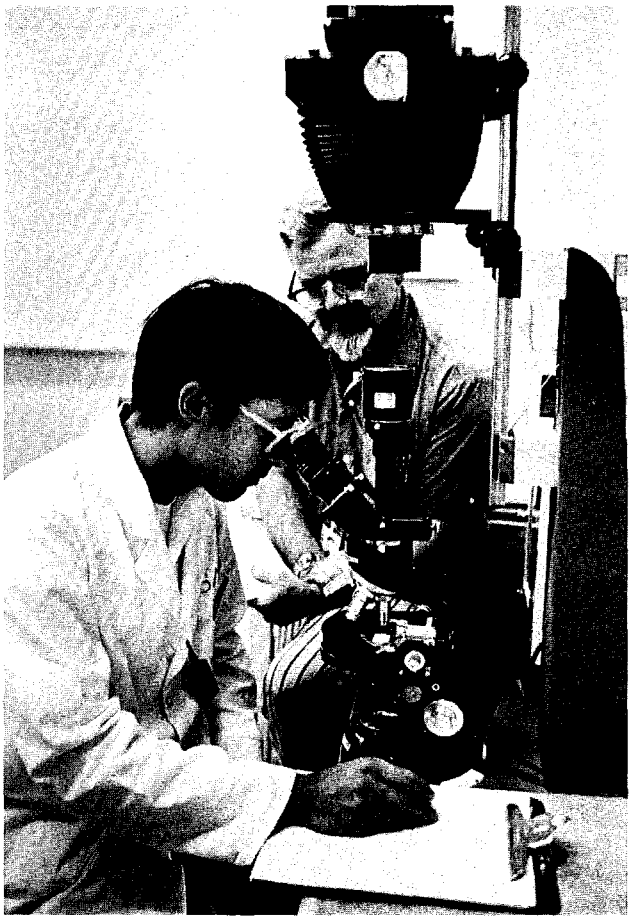


Above, a method for calibrating distribution of coal dust particles includes a Lovelace aerosol particle separator, being operated by Jose Martinez and Don Gettemy. From the coal dust atmosphere, particles are impregnated on foil in a spiral separator according to size. Foil is then removed, far right, by Marvin Tillery, and cut by George Royer, right, for measurements.



Tricky problem of standardizing asbestos particle counting is being tackled by H-5's aerosol section. Larry Ortiz examines a collection of asbestos particles and discusses the count with Charles Fairchild.

centration of dust particles in proportion to their respirability.

The instrument, which includes an aerosol chamber, generator and aerosol distribution system, was delivered to NIOSH in July for use in its Testing and Calibration Laboratory in West Virginia.

Still under way in the aerosol program is the development of a standard coal dust for use in research and in the testing and calibration of instruments and samplers. With bulk coal, mined by NIOSH from a special vein, H-5 workers are using jaw crushing, ball milling and micronizing techniques in an attempt to produce coal dust in appropriate sizes.

But physical size of particles is not the whole story, according to Ettinger. Because the lung judges a particle by its aerodynamic size, determined by such factors as size, shape, and density, Ettinger's group is studying the aerodynamic properties of particles, particularly under high and low humidity conditions to determine the effects of moisture.

A tougher problem than coal dust has been the program to prepare asbestos standards for state agencies measuring airborne asbestos.

"The law requires all states to sample airborne asbestos by counting the fibers," Ettinger explained, "but the trick is to get everyone to do it the same way." To solve the problem, H-5 has been asked to provide samples with identical and predictable concentrations of fibers so that counting systems can be standardized.

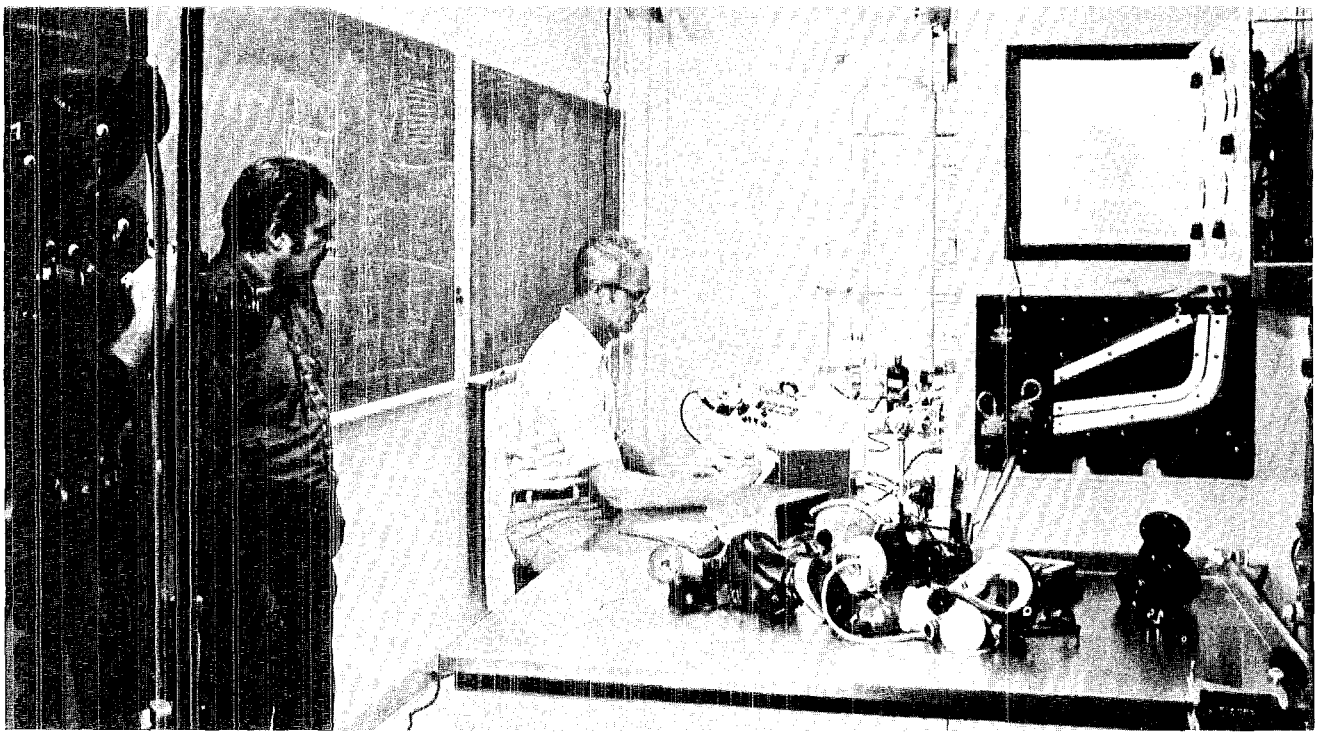
Ettinger's section is also attempting to develop efficient respirable samples for asbestos, "but with the odd fiber shapes," Ettinger said, "the problem is how to determine which sizes and shapes go down into the lung and which do not."

While their colleagues study the problems of detecting and measuring pollutants, members of the Respirator Research and Development Section, headed by Ed Hyatt, are concentrating on protection with the nation's first comprehensive program for respirator quality control.

"The public is always shocked to learn that people have been using respirators on faith all these years," Hyatt said. "Industry has rated the efficiency of the filters but there has never been an effort to check fit, the breathing valves, or the overall efficiency of the respirator on a man under working conditions."

The NIOSH agreement, now in its second year, calls for H-5 to develop test equipment and methods for quantitative determination of the protection afforded wearers of dust, fume and mist respirators. By October, Hyatt expects to begin work on other types of respirators including chemical cartridge types, gas masks, supplied air respirators and self-contained breathing apparatus. Working with Hyatt on the project are John Pritchard, Charles Richards, Louis Geoffrion, Lloyd Wheat, Tom Moore, Paul Hesch, Alan Hack, Tom Davis and Anthony Sanchez.

To rate respirator efficiency, volunteers wear respirators in a dust or mist-filled exposure chamber while performing a variety of exercises and movements that can affect performance. A probe



Providing industry and testing agencies with information and training in the use and testing of respirators is a significant part of H-5's working agreements with NIOSH. *Last month Jim DeField operated the instruments for testing respirators in a contaminated chamber while a team of photographers from Lawrence Livermore Laboratory filmed the operation.*

in the respirator enables measurement, by scattered light or flame photometry, of the amount of contaminant entering the face mask.

Measurements are made while the man is facing forward, moving his head up and down and back and forth, smiling, talking, laughing, and frowning, all of which can affect the face mask seal. Effects of these activities on the respirator are averaged to provide the total respirator efficiency rating or "protection factor" expressed as a number representing the maximum probable protection afforded by the respirator.

Two aerosols are used. One is sodium chloride (salt) because it correlates well with the silica dust of concern to the mining industry. The other is polydisperse dioctyl phthalate, a non-toxic oily substance used in industry as a plasticizer.

Systems in which the aerosols are used are similar. Both systems include a plastic exposure chamber, an aerosol generator and light scattering or flame photometer, and both are being modified into compact, self-contained, portable machines that will be used in NIOSH's Testing and Calibration Laboratory.

To further define fit problems, Hack has undertaken a study of respirator fit on types and sizes of faces most representative of the U.S. working population.

With advice from physical anthropologists from the Aeromedical Laboratory at Wright Patterson Air Force Base and statistical assistance from LASL's G-Division, Hack has made a series of 21 specific measurements on the faces of more than 200 Los Alamos men and has selected a panel of 16 to serve as standards for new fitting tests to begin in the fall. The results of the anthropometric tests will enable scientists to rate respirators according to which ones fit most face types most efficiently.

"Up to now, manufacturers have been making only one size respirator and each manufacturer's size is different from the other," Hyatt said. "Consequently, even though a respirator might have a high efficiency rating, it usually fits only about 75 per cent of the wearers."

The respirator quality control program is a high point in H-5's 20 years of experience in respirator studies. The NIOSH agreements will permit more rapid growth of respirator technology of interest to all U.S. industry.

Central Computing Facility Expansion Project Nearing Completion

Receiving and distribution activities were separated from machine areas by shelves before the new computer wing and service concourse were completed. The area at left was occupied by two of the three CDC 6600's.

In the area vacated by two of LASL's CDC 6600 computers, boxes of paper and equipment await moving crews.

The construction project to expand the Los Alamos Scientific Laboratory's Central Computing Facility is nearing completion. Four of the Laboratory's large computers and auxiliary equipment have been moved into the new computer wing. Receiving and distribution activities have begun in the new service concourse, and C-Division will begin occupying the new office building later this month.

The expansion program, totaling more than 55,000 square feet, is the largest in the history of computer operations at Los Alamos. Previous expansion projects have been largely stop-gap measures to resolve immediate space requirements. The Laboratory's original computer group was within T-Division and was located first near Ashley Pond and then on the second floor of the Administration Building. In 1960 an 11,000 square foot building was constructed to house the IBM 7030 (Stretch), first of the so-called "super" computers. A 19,000 square foot addition to this building was completed in 1965, yielding enough total space for Stretch, two IBM 7094's, a CDC 6600, three small computers and auxiliary equipment. In 1966, 7,000 square feet were added to accomodate equipment to meet growing electrical power and cooling needs, and to increase magnetic tape storage room and working space for computer users. Following this, three more 6600's were added to LASL's computer inventory. To alleviate to some extent extreme overcrowding caused by the acquisitions and to provide space for the installation of a CDC 7600, another addition of 11,000 square feet was constructed in 1969.

Although it was possible to retire certain older machines, delivery of needed new systems, among them a second 7600, perpetuated the scarcity of space. Operating areas became congested, some support functions or portions of them were forced into remotely located, inefficient and unsatisfactory space, and primary and backup building service equipment was installed on a space available basis.

The new expansion project, however, knits the CCF into a logical and efficient layout. The new service concourse affords a roomier distribution and receiving area with more convenient flow of user traffic. Building services can be separated into a modular arrangement

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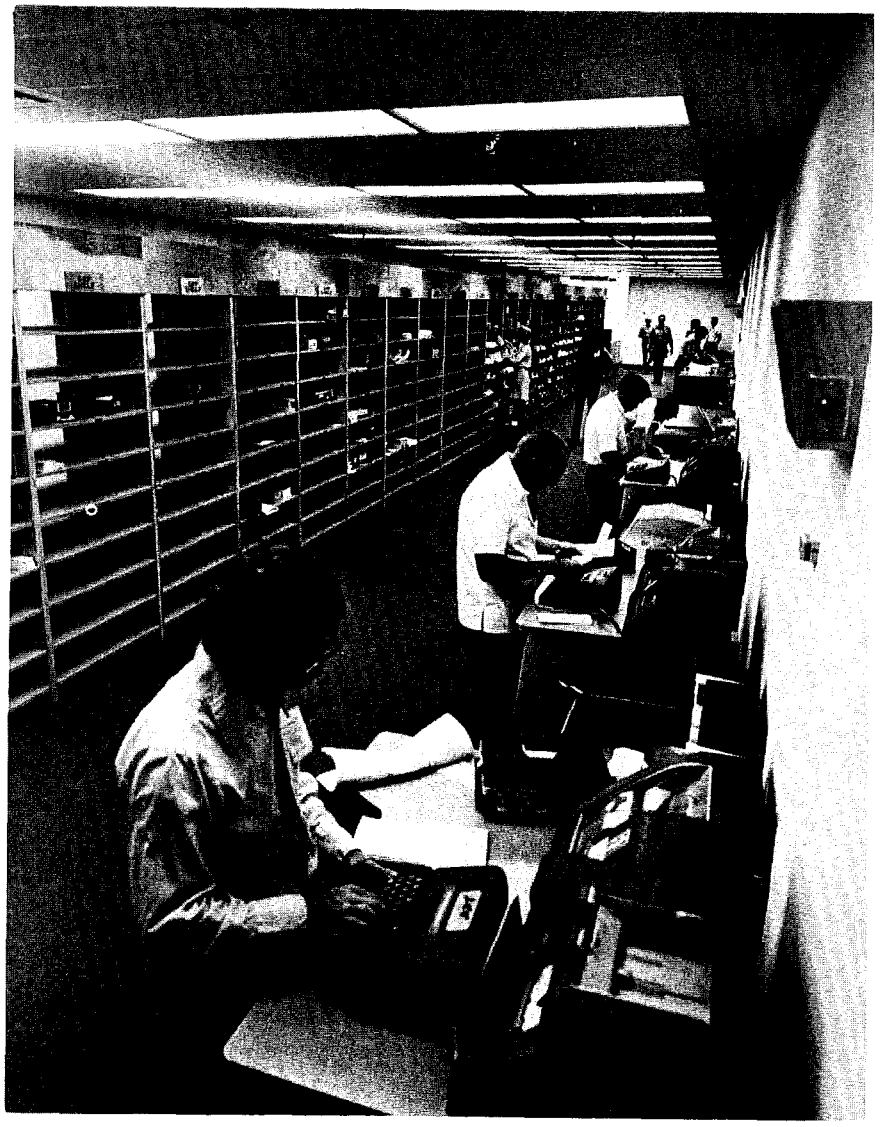


Upper left, new service concourse separates receiving and distribution activities from computer areas. Left, the dispatcher's station is located at one end of the concourse. Above, two of the 6600's are shown in the new computer wing.

which will limit the consequences of equipment failure or accident and room is provided for future computer acquisitions.

The new computer wing totals 21,000 square feet. It now houses the Laboratory's three 6600 computers, which provide a large portion of computer support to technical groups, and the MANIAC, used for research and development in the field of computer science.

According to Bill Spack, assistant C-Division leader, moving the 6600's was the most time-critical part of occupying the new CCF additions. While the simplest method of relocating the machines would have been to shut them all down, move them all at once, and then start them up again, the downtime would have been a serious blow to the Laboratory's technical programs. The computers are operated 24 hours a day to meet support commitments. For this reason, the computers and their auxiliary equipment were moved in a carefully planned sequence designed to minimize downtime. This sequence was coordinated by ENG-4 and C-Division personnel, and implemented by Control Data Corporation customer engineers and Zia Company Technical-Area Division craftsmen.

When the new computer wing was ready to receive the 6600's, CDC engineers began working around the clock. All three computers, numerically designated as 0, 1 and 2, and the Extended Core Storage unit were shut down, but only briefly. During this time, connections were severed between the

continued on next page

computers and ECS, a one-million-word memory unit shared by the three 6600's which also synchronizes their rates of operation. Computers 1 and 2 were rewired to operate independently of ECS and turned on to resume their support missions.

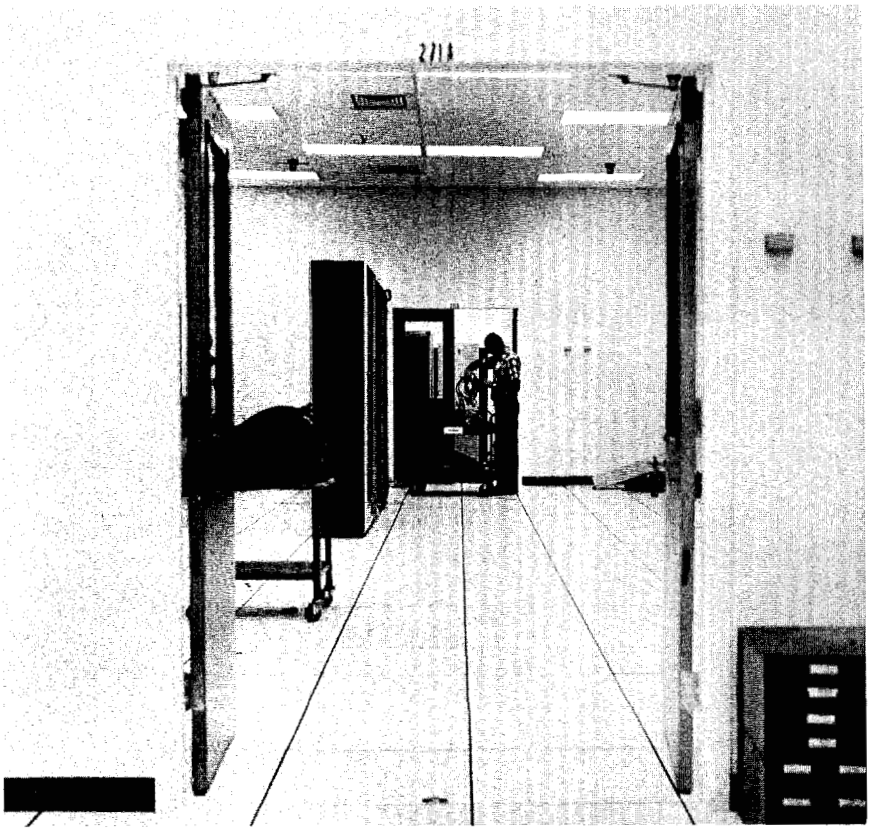
It took 11 days, one less than anticipated, to move, reconnect and check out 0 and ECS. This was followed by a 10-day recovery period during which moving activities were suspended in order to minimize the impact of the interruptions in service.

Subsequently, 1 and 2 were simultaneously shut down and moved into the new wing. Common power connections made independent moves of the two computers impractical. In another 11 days, 2 was linked with ECS and resumed operation. The next week, 1 was connected to ECS and put into operation. At about the same time, the MANIAC was moved from the second floor of the Administration Building to an area adjacent to the 6600's.

The new 2,000 square foot concourse contains the computer dispatcher's station, shelves for machine input and output material, and self-service keypunch equipment. It serves to provide users with better access to the CCF.

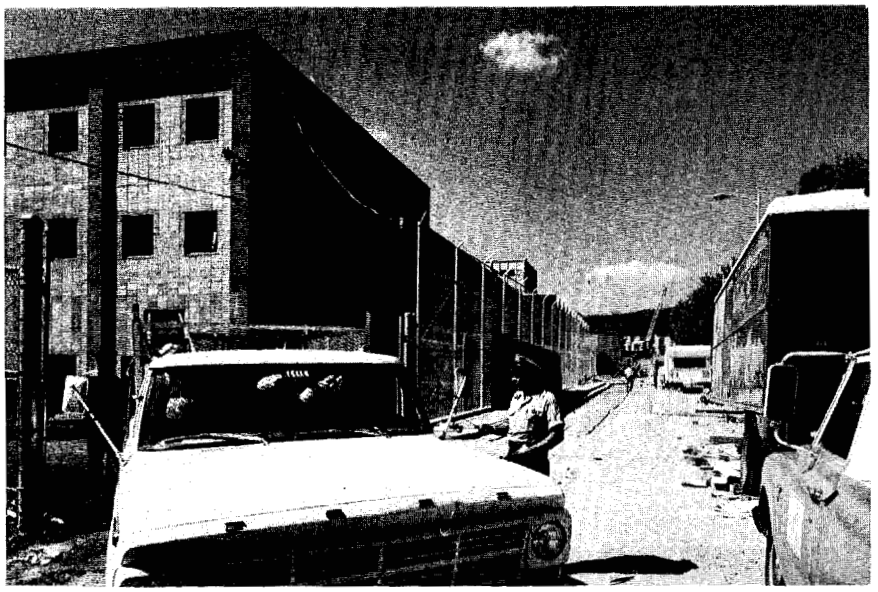
The office building, a three-story structure totaling 32,000 square feet, will bring all C-Division groups closer together, incidentally freeing urgently needed space on the second floor of the Administration Building, and provide space for users near the CCF.

The Laboratory's computing power has been approximately doubling every two years to meet the requirements of technical groups for additional computer support. The new additions to the CCF, according to Spack, should provide enough computer floor space for the foreseeable future. "Only a change in the computer capability growth pattern, in which new generations of machines have afforded much more power with relatively little increase in physical size, could alter this picture."

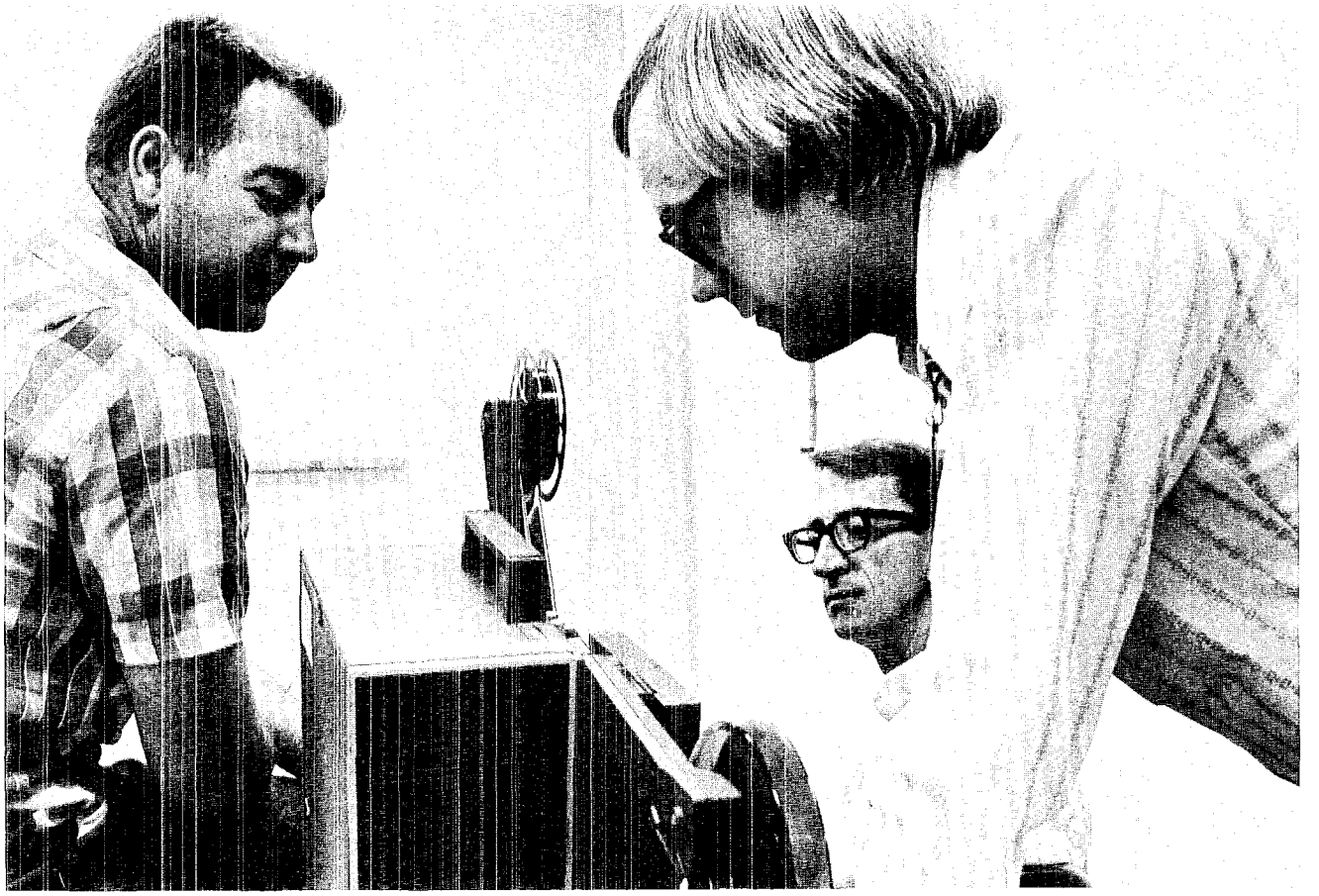


Only a portion of the MANIAC computer had been moved into the new computer wing when this photograph was taken. Don Tolmie, C-7, who assisted with the move, is shown sorting cables.

Construction workers are checked in and out of the security area where the CCF is located. In the background is the new office building.



Computer Generated 'Talkie' Movies



Lara Baker, TD-7, Edwin Tucker, ENG-7, and David Buckner, E-1, prepare to show "Sound Track No. 1."

The American public has been entertained by "talkie" motion pictures ever since 1927 when some sound effects and dialogue were introduced in "The Jazz Singer," starring Al Jolson.

Now, 45 years later, the computer has generated its first sound film. Called simply "Sound Track No. 1," it was produced at the Los Alamos Scientific Laboratory.

The LASL film includes the voice of Bob Blair, announcer for Los Alamos Radio Station KRSN, who reviews the techniques employed in the film's production. In addition, there is a wide range of other sounds such as those of a train, a gong, music and the impact of a fly swatter, all of which are synchronized with appropriate, but simple animations. Animations were used to emphasize the effectiveness of information provided by a sound track.

Computer generated motion pictures have been used by scientists and engineers for several years at LASL. They serve as a valuable design aid in that they organize vast amounts of information from simulation and analysis computer codes into visual presentations that can be more readily interpreted. Unlike the films shown at entertainment theaters, however, computer-generated films have traditionally required either the presence of a narrator or they have "dubbed in" sound effects and narration. Having a narrator accompany a film is expensive in terms of man-hours. Dubbing, which is farmed out to commercial vendors, is also expensive and, from the standpoint of time, it is often impractical.

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It was not known whether sound tracks could be practically and economically produced for computer-generated motion pictures. In conventional filming, picture and sound are recorded simultaneously on separate films and later combined before being released for showing. Computer-generated films, however, are produced on microfilm plotters from digital information on magnetic tapes. The plotter is a machine which converts digital information produced by a computer into a graphic display on the face of a cathode ray tube where it is photographed. In appearance, the image on the tube is similar to the image seen on a black and white television set. There are no synchronized voices or sound effects to accompany the images produced, and, until now there has been no way of incorporating them with the exception of human narration and dubbing.

The idea of adding sound tracks originated within LASL's Engineering Department during the production of a computer-generated motion picture showing the motion of a complex structure due to suddenly applied loads. After previewing the film it was noted that the information conveyed could have been effectively enhanced with a sound track describing the reactions of individual members to loading. Since these reactions were simulations devised by computer calculations, it appeared that the only way a sound track could be added was to have the computer generate it as well.

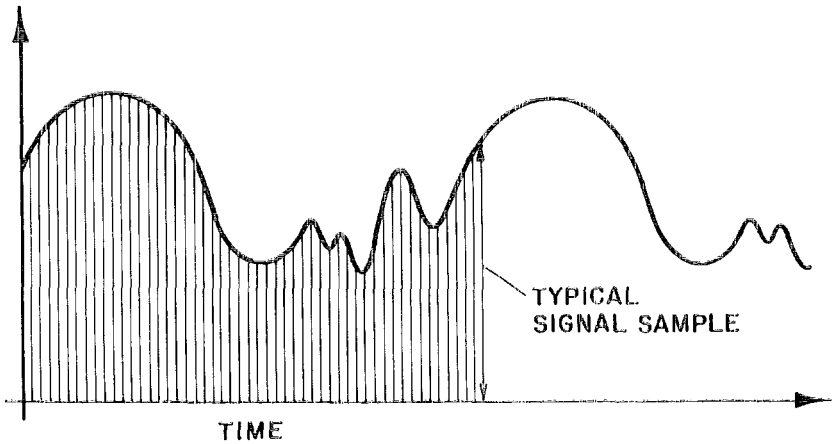
Subsequently, Edwin Tucker, ENG-7, began an investigation to determine the feasibility of computer-generated sound films. He enlisted the aid of Lara Baker, TD-7, and David Buckner, E-1, and together the three men demonstrated feasibility with the five-minute "Sound Track No. 1."

Tucker emphasized that the project's purpose was not to make the computer produce sounds or to create a new type of sound track. Rather, it was to get the computer to "reproduce" sounds and to create a sound track that could be used by existing projection equipment. With regard to the film simulating loads on a complex structure, whenever any part of the structure behaves in a certain manner—if it bends or breaks for example—the computer can assemble a narrative which describes the time, place and nature of the event. This provides quantative information that would be extremely difficult to present visually.

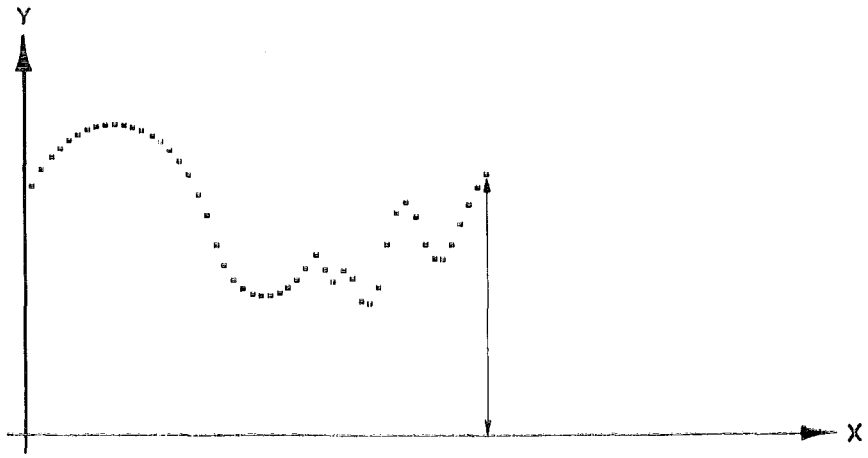
Baker, right, discusses programming technique for sound film production with Jerry Melendez, C-4, who assisted in its development.

A sound track is created by converting sound waves into variations in exposure on an otherwise unoccupied portion of film. These variations can be either in density or in area. In the sound producing unit of the projector, light of high intensity is focused on the film in line with the sound track. On the other side of the film is a photocell which produces an electric current corresponding to the variations in the amount of light which reaches it through the "variable area" or "variable density" track. The current produced by the photocell is then amplified and converted to sound by the loudspeaker portion of the projector's sound unit.

For the LASL film, a variable area sound track was produced. The method consisted of, first of all, recording Blair's voice and other sounds to be used in the film. The amplitudes of the recorded sound

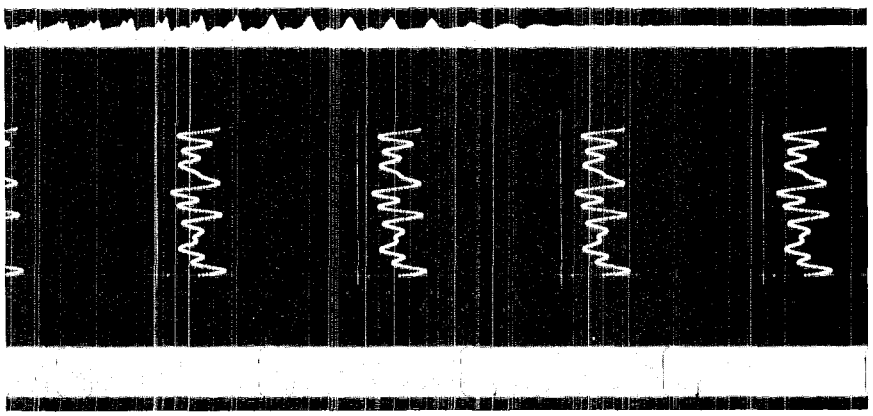


SAMPLING THE ORIGINAL SIGNAL



APPROXIMATING THE ORIGINAL SIGNAL FROM THE SAMPLES

Above, audio signals were converted into a form that can be manipulated by a digital computer by sampling amplitudes as a function of time at the rate of 25,000 times per second. Below, a variable density sound track was produced by treating amplitudes as lines of varying lengths, plotted close together.



waves were sampled at the rate of 25,000 times per second on an analogue-to-digital converter at Sandia Laboratories. In this way the amplitudes were converted into a digital format that can be stored and manipulated by one of LASL's 7600 computers. The computer then generated a single magnetic tape including both picture and sound commands for the microfilm plotter. The sound amplitudes were treated as lines of varying lengths. By plotting them close together on the track area of the film, an evenly exposed, wave-like, variable-area track was created.

At the time Tucker, Baker and Buckner began the project, microfilm plotters had been used routinely for several years to produce "silent" computer-generated motion pictures. Since sound tracks on film also appear as photographic images, the machine seemed to be a likely candidate for producing them. This likelihood was supported by some preliminary work in sound-film production at Sandia Laboratories.

There were three primary objectives. First, it was thought that the production of both picture and sound should be produced in one pass through the microfilm plotter, with synchronization of pictures and sound controlled by the computer code. Second, the code should be written to allow the user maximum flexibility and control of his sound track magnetic tapes; and, third, sound films produced should be useable by a standard 16 mm sound projector.

The code was written to handle several magnetic tapes simultaneously so that a variety of appropriate sounds, all synchronized with images, can be generated by the computer on a single control tape for the microfilm plotter.

Maximum flexibility and control of sound track magnetic tapes allows the user to make some sounds louder or softer than others, or to fade one out as he fades another in. In this way, for example, narration can be accompanied by softer background sounds such as music.

The objective to produce compu-

continued on next page

ter-generated sound film that can be used by any standard 16 mm sound projector was because of the potential of the technique. It was thought that if special equipment was required, computer-generated sound films would not enjoy very widespread use.

Before these objectives could be met, some alterations had to be made in a microfilm plotter's camera in such a way that its normal functions would not be affected. One was to remove the teeth on one side of an existing double-sprocketed film-transport assembly. This is because 16 mm sound film is single-sprocketed. It is driven by a sprocket on one edge of the film and the sound track is plotted on the other edge. Second, the lens was replaced with another of different focal length and with a modified aperture. The microfilm plotter was equipped with a lens whose field of view was limited to a small square on the film strip. What was needed was a lens whose field of view would include the edge of the film where the sound track was to be plotted and that would allow proper alignment and butting of the track.

After making these modifications the first sound film was produced. Although impressive, it was not entirely satisfactory. The film image was somewhat fuzzy and it flickered on the screen much the same as the entertainment "flicks" of long ago, and, the sound had periodic noises like those of a shorted electric razor.

One of the problems is that the camera used is not capable of consistently accurate butting of consecutive frames. This was the cause of both the flickering image and some of the unwanted noise. The slight loss of image resolution was the fault of the replacement lens which did not have the precise focal length needed to produce a sharp image.

According to Tucker, a more satisfactory version could be produced on a different microfilm plotter whose camera is capable of accurate film registration and which has a more suitable lens. The machine's transport system would have to be modified so it would accept single-sprocketed 16 mm film and the aperture of the camera's lens would have to be enlarged to plot the sound track on the edge of the film.

Modification of the microfilm plotter's camera was done by Buckner with the assistance of Dan Torres, E-1, and Joe Kleczka, C-1.

"Sound in the form of narration or as an additional channel for data presentation can be conveniently produced with computer-generated motion pictures," Tucker said. "And, it can be manipulated or altered by the user just as any other computer data. An important benefit of computer-generated sound tracks is that information can be presented in a more appealing and efficient manner."

Tucker, Baker and Buckner have had several inquiries from industrial concerns, universities and other laboratories concerning the method used to produce the computer-generated sound film. Because of this, and local interest, the three men plan to continue working toward improving the method. Of prime importance, Tucker said, is to find a way of representing sound that does not require as much computer storage and to make a comparison of variable area and variable density sound tracks with relation to extraneous noise.

United Fund Campaign for $125,000 Begins This Month

The Annual Los Alamos United Fund Campaign will be conducted this month to raise $125,000 to help support 17 participating agencies, according to Ed Grilly, campaign chairman.

Of the $125,000 goal, $118,500 will go to participating agencies. The remaining $6,500 will be used to offset campaign expenses and to establish a reserve fund to help participating agencies meet any unforeseen expenses incurred during the coming year.

There are six new United-Fund-supported agencies, bringing to 17 the total number that will benefit from the campaign. Five of the six have requested funds totaling $39,000 from the campaign now being conducted. The new agencies and money designated for their use are the Los Alamos Family YMCA, $7,000; Jemez House Boy's Ranch, $23,000; Sheltered Workshop, $4,000; Cystic Fibrosis Foundation, $3,800; and the New Mexico Council on Crime and Delinquency, $800. Middle Earth, although an approved participating agency, has not requested any funds.

Other organizations designated to receive supporting funds are the United Services Organization which is to receive $900; Salvation Army, $7,600; Cancer Clinic, $7,600; Los Alamos Association for Retarded Children, $5,200; Chaparral Home and Adoption Service of Albuquerque, $1,500; American Red Cross, $7,000; Heart Association, $4,500; Boy Scouts, $10,800; Girl Scouts, $10,800; Babe Ruth League, $1,800; Little League, $1,800; and Family Council, $20,000. Lassie League has not requested funds.

Citizens will be contacted at their places of employment for contributions which may be paid directly, by payroll deduction or on the installment plan.

David Heimbach, ISD-5 group leader, and Gilbert Ortiz, ISD-5 alternate group leader, are in charge of conducting the campaign at the Los Alamos Scientific Laboratory.

Other campaign workers include L. R. "Chico" Burciaga, who is in charge of the Zia Company/LACI campaign; Robert McClenahan, federal employees; Thomas Grasser, Don Anderson, Robert Cake, Vesta Claiborn and Wilton Parsons, Los Alamos businesses; Eugene Pollard, Los Alamos County; Carolyn Worthington and Dr. Ann Wadstrom, Los Alamos Medical Center; Duane Smith, Los Alamos schools; and Al Dyhre, retired people and clergy.

Lorraine Thorn, CMB-1, is handling public relations activities for the campaign.

Charles Browne Named J-Division Leader by LASL Director to Succeed William Ogle

Charles Browne, a staff member at the Los Alamos Scientific Laboratory for 17 years, has been appointed J-Division leader, succeeding William Ogle who has held the post since 1965.

The appointment was announced by LASL Director Harold Agnew and is effective Oct. 13.

Browne has worked at the Laboratory since 1952, until 1955 as a member of the U.S. Air Force assigned to LASL as a military staff member. He joined Group J-11 in 1955 as alternate group leader. He was named assistant J-Division leader in 1965, associate division leader in 1966 and alternate division leader in 1971.

The new division leader is a Fellow of the American Physical Society, a Fellow of the American Institute of Chemists, and a member of Sigma Xi. He has participated in several nuclear weapons test series both as an experimenter and as scientific advisor.

Ogle is leaving the Laboratory to become a private consultant and will move to Anchorage, Alaska. He has been employed by LASL since 1944. He participated in the design, building and testing of the world's first atomic bomb. Since World War II, he has been involved in nuclear testing activities in both the Pacific and at the Nevada Test Site and has probably witnessed and participated in more nuclear weapon tests than any other man in the world.

He was an Atomic Energy Commission delegate to the Geneva Conference on Nuclear Test Suspensions in 1959. He received the Department of Defense Award in 1956; the U.S. Navy Distinguished Service Medal in 1963 for his "outstanding contributions to the Department of the Navy in the field of nuclear weapons technology;" the Department of Defense Distinguished Public Service Medal in 1966 for "exceptional meritorious civilian service while serving in the national nuclear weapons testing program from November, 1944, to January, 1966;" and the AEC Citation in 1971 for his "outstanding contributions to the defense of the United States through his leadership and participation in the nuclear weapons test program of the Los Alamos Scientific Laboratory since 1944."

Charles Browne

William Ogle

the technical side

Taken from LASL Technical Information Reports submitted through ISD-6

Summer Institute on Application of Mathematical Methods of Nonlinear Problems, Battelle Institute, Seattle, Wash., July 3-28:

"On Predator-Prey Equations Simulating an Immune Response" by G. H. Pimbley, T-DOT

Lebedev Institute, Moscow, Russia, July 3; C. G. E. Labratoire de Marcoussis, Marcoussis, France, July 13, and Services Research Laboratory, Baldock, Hertford, Great Britain, July 17:

"High-Energy Short-Pulse CO_2 Amplifier Systems Based upon Electron Beam Controlled Discharge Pumping" by C. A. Fenstermacher, L-1

Gordon Research Conference, Beaver Dam, Wisc., July 10-14:

"Carbon Magnetic Resonance as a Probe of some ^{13}C-Enriched Rh and Ir Carbonyl Complexes" by P. Vergamini and N. A. Matwiyoff, both CNC-4

Seminar, Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y., July 11:

"DNA of Mammalian Cells: High-Speed Flow Microspectrofluorometry" by L. S. Cram and H. A. Crissman, both H-4 (invited)

Sixth International Cyclotron Conference, Vancouver, British Columbia, July 18-21:

"Status of Construction and Experimental Program for LAMPF" by L. Rosen, MP-DO (invited)

Sloan Kettering Institute, New York City, N.Y., July 24:

"Negative Pions in Radiotherapy: Physical and Radiobiological Aspects" by M. R. Raju, H-4 (invited)

Nuclear Structure Gordon Research Conference, Tilton, N.H., July 24-28:

"Recent Calculations of Fission Barriers for Heavy and Superheavy Nuclei" by J. R. Nix, T-9 (invited)

Seminar, Department of Biology, M. D. Anderson Hospital and Tumor Institute, University of Texas, Houston, July 26:

"The Paradox of DNA Constancy in Heteroploid Cell Populations" by L. L. Deaven, H-4 (invited)

Third International Conference on Medical Physics Including Medical Engineering, Göteborg, Sweden, July 30-Aug. 4:

"Pi Minus Beams in Radiotherapy Facility at the Los Alamos Meson Physics Facility" by A. S. Lundy, R. L. Hutson, E. A. Knapp, all MP-3, and L. Rosen, MP-DO

Fourteenth Annual Rocky Mountain Spectroscopy Conference, Denver, Colo. July 31-Aug. 1:

"Prevention of Ejection of Electrode Charge During Arcing of Uranium Compounds" by Juanita V. Pena and O. A. Simi, both CMB-1

Conference on Nuclear Structure Study with Neutrons, Budapest, Hungary, July 31-Aug. 5:

"WNR, A Neutron Time-of-Flight Facility at the Los Alamos Scientific Laboratory by M. S. Moore, W-11 (invited)

Twenty-First Annual X-Ray Conference, Denver, Colo., Aug. 2-4:

"Effects of Self-Irradiation on the Lattice of 238(80%)PuO_2. Part II" by R. B. Roof, CMB-5

"Sensitivity and Detectability Limits for Elemental Analysis by Proton-Induced X-ray Fluorescence with a 3-MV Van de Graaff" by C. J. Umbarger, D. A. Close, and J. J. Malanify, all A-1, and R. C. Bearse, visiting staff member with A-1

Associated Universities Summer Institute on Energy Sources for the Future, Oak Ridge, Tenn., Aug. 7:

"Clean Energy from the Earth" by M. C. Smith, CMB-13 (invited)

Seminar, Physics Department, University of Canterbury, Christchurch, New Zealand, Aug. 7:

"Painting Geomagnetic Field Lines" by H. M. Peek, J-10

Summer Oncology Course, Edward Mallinckrodt Institute of Radiology, Washington University School of Medicine, St. Louis, Mo., Aug. 7-8:

"Preclinical Experiments in Pion Radiobiology" by D. F. Petersen, H-4 (invited)

"Cell-Cycle Analysis and Growth Properties of Chinese Hamster Cells" by D. F. Petersen, H-4 (invited)

"Cell Kinetics in Radiobiology" by D. F. Petersen, H-4 (invited)

1972 Engineering Foundation Conference on Engineering in Medicine—Automatic Cytology, Saxtons River, Vt., Aug. 7-11:

"Flow System Cell Analysis" by M. A. Van Dilla, H-4 (invited)

Lawrence Livermore Laboratory, Calif., Aug. 8:

The Los Alamos Chemical Laser Program" by R. J. Jensen, L-3

Meeting on "A Coherent Program for the Development of Advanced Heavy-Ion Sources," National Academy of Sciences, Washington, D.C., Aug. 9:

"Identification of New Directions in Ion Sourcery" by C. R. Emigh, MP-4

Cryogenic Engineering Conference, Boulder, Colo., Aug. 9-11:

"Vibration Simulation of a Space Probe Model, Superconducting Energy Storage Coil" by J. D. Rogers, P-8

"Cryogenic Instrumentation At and Above Liquid Hydrogen Temperature—Present and Future" by W. E. Keller, P-8

"Large Scale Handling of Liquid Hydrogen" by F. J. Edeskuty, P-8

"Interpretation and Correlation

continued on next page

of Deviations from a Hydrodynamic Channel Boiling Theory of Data on Nitrogen and Hydrogen In Forced and Free-Flow Boiling" by S. G. Sydoriak, P-8

Drug Evaluation Branch Program Review, National Cancer Institute, Bethesda, Md., Aug. 10:

"Studies of Cell Surface Utilizing Flow Microfluorometry" by P. M. Kraemer, H-4 (invited)

"Cell Preparative Considerations in the General Operative Features of Flow Microfluorometry" by H. A. Crissman, H-4 (invited)

"Detailed Analysis of Drug Effects on Mammalian Cell Replication Utilizing Flow Microfluorometry" by R. A. Tobey, H-4 (invited)

Symposium on Cosmochemistry, International Association of Geochemistry and Cosmochemistry, Cambridge, Mass., Aug. 14-16:

"^{244}Pu as a Possible Indicator of Interstellar Dust within the Solar System" by G. A. Cowan, CNC-DO

Association for Computing Machinery 1972 Annual Conference, Boston, Mass., Aug. 14-16:

"The Specification of Program Flow in Madcap VI" by J. B. Morris, Jr., and M. B. Wells, both C-7

1972 Annual Meeting, American Statistical Association, Montreal, Canada, Aug. 14-17:

"Estimators of Coefficient of Variation Using k Samples" by R. K. Zeigler, C-5

American Astronomical Society's 138th Meeting, East Lansing, Mich., Aug. 16-18:

"The Importance of Iron Opacities in the Solar Balloon Ultraviolet" by A. N. Cox, J-15, A. L. Merts and N. H. Magee, both T-4

Meeting on the Molecular Biology of SV40, Polyoma and Adeno Viruses, Aug. 16-19; and Herpes Virus Meeting, Aug. 20-24, both at Cold Spring Laboratory, Cold Spring Harbor, N.Y.:

"Parameters of Virus Infection as Studied by Flow Microfluorometry" by P. K. Horan, H-4 (invited)

American Academy of Clinical Toxologists Meeting, Aspen, Colo., Aug. 17:

"Beryllium Toxicity: An Industrial Hygiene Viewpoint" by H. F. Schulte, H-5

Colloquium at the Institute for Atomic and Molecular Physics, Amsterdam, The Netherlands, Aug. 17, and University of Liege, Liege, Belgium, Aug. 18:

"Spectra of Emission from Long-Lived States of Diatomic Ions" by W. B. Maier II and R. F. Holland, both J-10 (invited)

Massachusetts Institute of Technology, Cambridge, Aug. 18:

"Anomalous Microwave Absorption Near the Plasma Frequency" by J. C. Ingraham, P-13

Fourteenth International Symposium on Combustion, The Combustion Institute, University Park, Pa., Aug. 20-25:

"Precise Measurements of Diatomic Dissociation Rates in Shock Waves" by W. D. Breshears and P. F. Bird, both L-3

Fourth International Liquid Crystal Conference, Kent State University, Kent, Ohio, Aug. 21-25:

"Effects of the Passage of Ionizing Particles through a Liquid Crystal" by D. E. Nagle, MP-DO, and J. W. Doane, R. Madey and A. Saupe, all Kent State University, Ohio

Fifth European Conference on Controlled Fusion and Plasma Physics, Grenoble, France, Aug. 21-25:

"Anomalous Microwave Absorption near the Plasma Frequency" by H. Dreicer, R. F. Ellis and J. C. Ingraham, all P-13

"Application of the Vlasov-Fluid Model to High-Beta Stability" by H. R. Lewis and J. P. Freidberg, both P-18

"Results from Toroidal Z-Pinch Experiment ZT-1" by L. C. Burkhardt, J. N. DiMarco, P. R. Forman, A. Haberstich, H. J. Karr and J. A. Phillips, all P-14

"Survey of Scyllac Experiments" by S. C. Burnett, W. R. Ellis, R. F. Gribble, C. R. Harder, F. C. Jahoda, W. E. Quinn, G. A. Sawyer, R. E. Siemon, K. S. Thomas, all P-15, C. F. Hammer, H. W. Harris, both P-16, and F. L. Ribe, P-DO

Thirteenth International Conference on Low Temperature Physics, Boulder, Colo., Aug. 21-25:

"Superconductivity of Protactinium" by R. D. Fowler, formerly CMF-DO, L. B. Asprey, CNC-4, J. D. G. Lindsay, P-8, and R. W. White, CMB-3

"Direct Evidence for the Co-existence of Superconductivity and Ferromagnetism" by R. D. Taylor and D. J. Erickson, both P-8, W. R. Decker, Western New Mexico University, Silver City, A. L. Giorgi and E. G. Szklarz, both CMB-3, B. T. Matthias, University of California, San Diego, and C. E. Olsen, CMB-13

"Direct Measurement of the Dissipation Function of the Flowing Saturated He II Film" by W. E. Keller and E. F. Hammel, both P-8

"Dissipation in the Flowing Saturated Superfluid Film" by J. K. Hoffer, J. C. Fraser, L. J. Campbell, W. E. Keller, E. F. Hammel and R. H. Sherman, all P-8

"Determination of the Crystal Structures of D_2 by Neutron Diffraction" by R. L. Mills and A. F. Schuch, both P-8, and J. L. Yarnell, P-2

"Application of the Fluctuation Model of Dissipation to Beaker Film Flow" by L. J. Campbell, P-8

"Helium Film Flow Dissipation with a Restrictive Geometry" by D. H. Liebenberg, P-8

"Hydrodynamic Theory Correlation for 72 Helium Evaporators" by S. G. Sydoriak, P-8

Seventeenth Ampere Congress, University of Turku, Finland, Aug. 21-26:

"Sodium NMR Study of Phase Transitions in NaCN" by E. Fukushima, CNC-4 (invited)

U.S. Air Force Scientific Advisory Board, Woods Hole, Mass., Aug. 24-25:

"Laser Pulsed Propulsion Systems" by K. Boyer, L-DO

Symposium, University of Missouri, Columbia, Aug. 24-26:

"Image Restoration by Constrained Least-Squares Estimation" by B. R. Hunt, C-5

International Conference on Applications of the Mössbauer Effect, Ayeleth Hashachar, Israel, Aug. 26-Sept. 1:

"A Study of the Mössbauer Effect for Gold" by L. D. Roberts and J. F. Prince, both University of North Carolina, Chapel Hill, and D. J. Erickson, P-8

"Mössbauer Effect for the Coexistence of Ferromagnetism and Superconductivity" by R. D. Taylor, P-8

American Chemical Society's 164th National Meeting, New York, N.Y., Aug. 27-Sept. 1:

"Initiation of **In Vitro** RNA Synthesis with Oligodeoxyribonucleotides" by D. A. Smith, A. M. Martinez, and D. L. Williams, all H-4

"Ultralow Temperature Nuclear Physics" by W A. Steyert, P-8 (invited)

"Transient Oxygen Atom Yields in H_2-O_2 Ignition and the Rate Coefficient for $O + H_2 \rightarrow OH + H$" by G. L. Schott and R. W. Getzinger, both L-3, and W. A. Seitz, formerly GMX-7

"Proton Spallation Cross Sections at 600 MeV for V, Co, As, Nb, Ta, and Bi Targets" by H. A. O'Brien, Jr., and C. J. Orth, both CNC-11, and M. E. Schillaci, MP-3

"Infrared and Laser Raman Spectra of the Group III-A Hexafluoride Ions" by M. J. Reisfeld, CNC-4

"Multinucleus Magnetic Resonance of Paramagnetic Complexes" by L. O. Morgan, CNC-4

"Carbon-13 NMR of Paramagnetic Complexes" by N. A. Matwiyoff, CNC-4

"Preparation of Ferromagnetic Neutron Absorbing Materials" by M. C. Tinkle, CMB-8, and C. E. Olsen, CMB-13

Ninth International Congress of Crystallography, Kyoto, Japan, Aug. 27-Sept. 7:

"Reexamination of the Crystal Structure of 'B_4C'" by A. C. Larson and D. T. Cromer, both CMB-5

"Crystallographic Computer Developments in North America" by A. C. Larson, CMB-5 (invited)

Solar Terrestrial Relations Conference, University of Calgary, Alberta, Canada, Aug. 28-Sept. 1:

"Substorm Phenomena in the Distant Magnetosphere" by E. W. Hones, Jr., P-4

First International Conference on Spectral Lines, Knoxville, Tenn., Aug. 28-Sept. 1:

"Transition Probabilities for OH and OD" by P. E. Rouse and R. Engleman, Jr., both GMX-2

"The Effect of Compton Scattering on Non-LTE Special Line Transport" by G. N. Minerbo, TD-3

Twelfth Atomic Energy Commission Air Cleaning Conference, Oak Ridge, Tenn., Aug. 28:

"Size Characteristics of Plutonium Aerosols" by H. J. Ettinger, J. C. Elder, and M. Gonzales, all H-5

National Cancer Institute, Bethesda, Md., Aug. 28:

"Flow Microfluorometry as Applied to Cancer Diagnosis" by P. K. Horan, H-4 (invited)

International Conference on Few Particle Problems in the Nuclear Interaction, University of California, Los Angeles, Aug. 28-Sept. 1:

"Research on Few Particle Systems at LAMPF" by J. E. Simmons, P-DOR (invited)

"Accurate Deuteron-Deuteron Elastic Scattering Cross Sections" by N. Jarmie, P-DOR, and J. H. Jett, H-4

"Neutrino-Deuteron Interaction Cross Sections at LAMPF Energies" by J. E. Brolley, P-DOR, and A. H. Huffman, California Institute of Technology, Pasadena

Third Annual Meeting, Nuclear Survivability Working Group on Propulsion and Ordnance Systems, Lockheed Palo Alto Research Laboratory, Calif., Aug. 29-30:

"Front-Surface Blowoff Velocities Resulting from Nuclear Effects" by W. L. Seitz and S. D. Gardner, both GMX-7

"X-Ray Effects on EBW Detonators" by T. R. Gibbs, GMX-7

20 years ago in los alamos

Culled from the October, 1952, files of the Santa Fe New Mexican

by Bob Brashear

Dollar-a-Year Deal

Six persons filed as candidates for the Los Alamos County Commission. Filing for the dollar-a-year positions were Joseph Nigon, Donald LeNoue, Henry Heyman, Hoyt Wilcoxon, Jr., Cecil Badsgard and Alvin Embry.

Fireballs in Technicolor

A Los Alamos resident reported seeing a giant fireball in the northern sky. He said the fireball was a "brilliant pastel green" with a short tail streaming behind. Another similar report, also from a Hill resident, came later in the month. He described the phenomenon as "bluish-white with a long tail shooting sparks."

A Four-Lane Highway

Included in the State Highway Department invitations was a "four-lane highway between Totavi and White Rock Road." The proposal stated that New Mexico would pay for one mile and the Bureau of Public Roads, using Atomic Energy Commission funds, would pay for two miles.

Junior Annie Oakley

Jana Haley, 17-year-old daughter of Mr. and Mrs. Jano Haley, won the Distinguished Rifleman Award from the National Rifle Association. Coached for barely three years by Robert McNeil, Jana jumped into the top ranks of junior sharpshooters in the country.

Bear Facts

Kevin, one of Frank Steghel's collies, returned home after a month in a dog hospital following a fight with a bear. The dog suffered nine wounds which took more than 150 stitches to close.

Women's Lib Not on Agenda

The theme for the 13th Annual Convention of the New Mexico Federation of Women's Clubs, held in Los Alamos, was "Educating Our Children for Better Citizenship."

what's doing

BIEN DICHO TOASTMASTERS CLUB: Luncheon meeting, 12:05 p.m., Mondays, South Mesa Cafeteria. For information, call William Pracht, 672-1920.

SIERRA CLUB: Luncheon meeting at noon, first Tuesday of each month, South Mesa Cafeteria. For information, call Brant Calkin, 455-2468, Santa Fe.

RIO GRANDE RIVER RUNNERS: Meetings scheduled for noon, second Friday of each month at South Mesa Cafeteria. For information, call Jon Cross, 662-7521.

LOS ALAMOS SAILORS: Meetings at noon, South Mesa Cafeteria, first Friday of each month. For information, call Dick Young, 662-3751.

SPORTS CAR CLUB DEL VALLE RIO GRANDE: Meetings, 7:30 p.m., Hospitality Room, Los Alamos National Bank, first Tuesday of each month. For information, call Gerry Strickfadden, 672-3664 or Frank Clinard, 662-4951.

PUBLIC SWIMMING: High School Pool—Monday through Wednesday, 7:30 to 9:30 p.m., Saturday and Sunday, 1 to 5 p.m. Adult swim club, Sunday, 7 to 9 p.m.

MESA PUBLIC LIBRARY:
Sept. 19-Oct. 17—Barry Jones, batiks
Oct. 3-Oct. 17—Display, "How to Care for Birds"
Oct. 11-Oct. 31—Display, "Hadassah"
Oct. 18-Nov. 14—Display, "UNICEF"

OUTDOOR ASSOCIATION: No charge, open to the public. Contact leaders for information.
Oct. 5-9—Grand Canyon (rim to rim), Bob Skaggs, 662-6957 (limited to 25)
Oct. 15—Rio Grande Cottonwood cruise, Jon Cross, 662-7521
Oct. 14-15—Largo and Crow Canyons, Ken Ewing, 662-7488
Oct. 21-23—Guadalupe Peak, Texas, Ted Norris, 662-3466

MOUNTAIN MIXERS SQUARE DANCING CLUB: Mesa School, 8 p.m. For information, call Ruth Maier, 662-3834.
Oct. 7—Bones Craig, club caller
Oct. 21—Bill Wright, Farmington

LOS ALAMOS CONCERT ASSOCIATION:
Oct. 25, 8:15 p.m., Civic Auditorium, Baller and Rejto, Cello-Piano Duo. For information, call Marilyn Stevens, 662-4873.

NEWCOMERS CLUB: Oct. 25, 7:30 p.m., Los Alamos National Bank, "High Altitude Cooking." For information, call Linda Hertrich, 662-9355.

LOS ALAMOS VOLLEYBALL CLUB: Every Monday, Girls' Gym, Los Alamos High School, Men—6 to 7:30 p.m., Women—8 to 9:30 p.m. For information, call Don Shepard, 662-7865.

Members of University of California President Charles Hitch's Scientific Advisory Committee toured the Los Alamos Meson Physics Facility during their recent visit to the Laboratory. Describing activities in Experimental Area A is MP-Division Leader Louis Rosen, second from left. At left is Thomas Putnam, assistant MP-Division leader for safety. Members of the committee are John Wheeler, Princeton University, New Jersey; Harold Weaver, University of California at Berkeley; Lt. Gen. James Doolittle, USAF (retired), Los Angeles, Calif.; Frederick Wall, Rice University, Houston, Texas; Cyril Comar, New York Veterinary College, Cornell University, Ithaca, N.Y.; Committee Chairman William McMillan, University of California at Los Angeles; and Geoffrey Chew, University of California at Berkeley.

U.S. Congressman Barry Goldwater, Jr., (right) of California, visits with LASL Director Harold Agnew and N-Division Leader Roderick Spence during a recent visit to the Los Alamos Scientific Laboratory. Goldwater toured some facilities and was briefed on Laboratory projects.

Henry T. Motz
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Los Alamos, New Mexico 87544

Dixy Lee Ray, newly appointed member of the Atomic Energy Commission, toured facilities and was briefed on projects at the Los Alamos Scientific Laboratory recently. She is shown here at LASL's Health Research Laboratory where she is briefed by Don Petersen, H-4. At left is the commissioner's secretary, Jane Orr.